IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Veronique ZIMPFER, Karl BUCK

Application No.:   New US Patent Application

Filed:  October 1, 2001                    Docket No.:  109555

For:   BROAD-DYNAMIC FILTERING PROCEDURE FOR A RECURSIVE DIGITAL
       FILTER INSTALLED IN A SIGNAL PROCESSOR (DSP) OPERATING WITH
       INTEGERS

### PRELIMINARY AMENDMENT

Director of the U.S. Patent and Trademark Office
Washington, D. C.  20231

Sir:

Prior to initial examination, please amend the above-identified application as follows:

IN THE SPECIFICATION:

Please replace paragraphs [0010] and [0027] as follows:

[0010] The invention completes the output signal calculation procedure by taking into account the remainders of integer divisions carried out when the output signal from the previous samples is calculated. This calculation is done according to the following equation (here indicated in the particular case of a second-order cell):

$$y(n) = Q\left( \frac{Q\left( \frac{scf \cdot x(n) + b_1 \cdot x(n-1) + b_2 \cdot x(n-2)}{K} \right) - a_1 \cdot y(n-1) - a_2 \cdot y(n-2) + Q\left( \frac{-a_1 \cdot r(n-1) - a_2 \cdot r(n-2)}{scf} \right)}{scf} \right)$$

instead of:

$$y(n) = Q\left( \frac{Q\left( \frac{scf \cdot x(n) + b_1 \cdot x(n-1) + b_2 \cdot x(n-2)}{K} \right) - a_1 \cdot y(n-1) - a_2 \cdot y(n-2)}{scf} \right)$$

for a classical calculation of an implemented recursive digital filter in which Q( ) is the non-linear quantification operator when integers are divided and "scf" is the scale factor chosen.
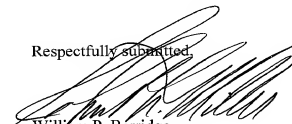
[0027] Finally, the larger the scale factor, the smaller the error due to quantification of the coefficients and the larger the number of filters that can be made. Hence it is preferable to use a DSP with a word length of 32 bits. This enables the value $scf=2^{32-16-2}=2^{14}=16384$ to be taken for the scale factor.

## REMARKS

Claims 1-12 are pending. The amendments are to correct minor typographical errors found in the specification. It is respectfully requested that the amendments be entered prior to taking the application up for examination.

The attached Appendix includes marked-up copies of each rewritten paragraph (37 C.F.R. §1.121(b)(1)(iii)).

Respectfully submitted,

William P. Berridge
Registration No. 30,024

Robert A. Miller
Registration No. 32,771

WPB:RAM/zmc

Attached: APPENDIX

Date: October 1, 2001

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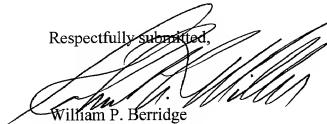        INTEGERS

## LETTER TO THE OFFICIAL DRAFTSPERSON

Director of the U.S. Patent and Trademark Office
Washington, D.C.  20231

Sir:

        Attached is a corrected Figure 4 correcting Fig. 4 as indicated in the Request for

Approval of Drawing Correction filed herewith.  The correction is solely to remove an

unnecessary line.

                                        Respectfully submitted,

                                        William P. Berridge
                                        Registration No. 30,024

                                        Robert A. Miller
                                        Registration No. 32,771

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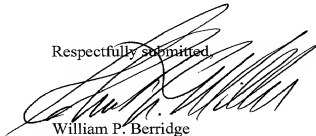### REQUEST FOR APPROVAL OF DRAWING CORRECTION

Director of the U.S. Patent and Trademark Office
Washington, D.C.  20231

Sir:

The Examiner is requested to review and approve the proposed correction to Figure 4 ,
marked in red on the attached copy of such drawing figure.

Upon approval by the Examiner, and upon allowance of this application, the formal
drawings will be corrected.

Respectfully submitted,

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Robert A. Miller
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**FIG. 4**